

QoS Configuration Commands

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Chapter 1 QoS Configuration Commands

1.1 QoS Configuration Commands

QoS configuration commands include:

- cos default
- cos map
- cos bandwidth
- dscp map
- scheduler policy
- scheduler weight bandwidth
- policy-map
- classify
- action
- qos policy
- show policy-map

1.1.1 cos default

Syntax

To configure the default COS value, run `cos default cos`. To return to the default setting, use the `no` form of this command.

cos default cos

no cos default

Parameters

Parameters	Description
cos	The COS value ranges between 0 and 7.

Default Value

The default COS value is 0.

Command Mode

Global configuration mode, interface configuration mode

Usage Guidelines

It works on the PON interface or uplink port interface.

Example

The following example shows how to set the CoS value of the untagged frame received by interface g0/1 to 4.

```
Switch_config#interface g0/1
```

```
Switch_config_g0/1#cos default 4
```

1.1.2 cos map

Syntax

To set the CoS priority queues, use the `cos map` command. To return to the default setting, use the `no` form of this command.

cos map quid [cos-value] &<0-8>

no cos map [quid]

Parameters

Parameters	Description
<i>quid</i>	Stands for the ID of the CoS priority queue, 1 to 8.
<i>cos-value</i>	CoS value defined by IEEE802.1p, ranging between 0 and 7

Default Value

CoS Value	S Priority Queue
0	1
1	2
2	3
3	4
4	5
5	6
6	7
7	8

Command Mode

Global configuration mode, interface configuration mode

Usage Guidelines

The command is run in the global configuration mode.

Example

The following example shows how to map CoS 0-2 to CoS priority queue 1 and CoS 3 to CoS priority queue 2.

```
Switch_config # cos map 1 0 1 2
```

```
Switch_config # cos map 2 3
```

1.1.3 cos bandwidth

Syntax

To set the minimum bandwidth or the maximum bandwidth of the port cos queue, run the following command.

cos bandwidth *quid min-bandwidth max-bandwidth*

no cos bandwidth *quid*

Parameters

Parameters	Description
<i>quid</i>	Stands for the ID of the CoS priority queue, 1 to 8.
<i>min-bandwidth</i>	Stands for the minimum bandwidth 0 to 16384. The unit is 64Kbps.
<i>max-bandwidth</i>	Stands for the maximum bandwidth, <i>min-bandwidth-16384</i> , unit 64Kbps

Default Value

The minimum bandwidth of each queue is 0 and the maximum port rate of the maximum bandwidth.

Command Mode

Interface configuration mode

Usage Guidelines

It works in PON port or uplink port configuration mode. The scheduling policy is effective between the minimum and the maximum bandwidth. The data flow lower than the minimum bandwidth passes through and the data flow higher than the maximum bandwidth drops.

Example

The following example shows how to set the minimum bandwidth 100 and the maximum bandwidth 1000 on interface g0/1.

```
Switch_config# interface g0/1
Switch_config_g0/1#cos bandwidth 1 100 1000
```

1.1.4 dscp map

Syntax

To set the CoS priority queues according to dscp, use the cos map command. To return to the default setting, use the no form of this command.

dscp map *word* {**dscp** *dscp-value* | **cos** *cos-value* | **cng** *cng-bit* }

no dscp map [*word*]

Parameters

Parameters	Description
<i>word</i>	Dscp range table, for instance, (1,3,5,7), (1, 3-5,7), (1-7).
dscp <i>dscp-value</i>	Dscp value of Dscp mapping, 0-63.
cos <i>cos-value</i>	The priority cos of Dscp mapping, 0-7.
cng <i>cng-bit</i>	Congestion bits, GREEN(0), YELLOW(3), RED(1) of Dscp mapping

Default Value

None

Command Mode

Global configuration mode

Usage Guidelines

This command is run in global configuration mode.

Example

The following example shows how to map dscp 0-2 to CoS priority 1; the mapping dscp value is 5 and the congestion is 0.

```
Switch_config#dscp map 0-2 cos 1 dscp 5 cng 0
```

1.1.5 scheduler policy

Syntax

To set CoS priority queue debug policy, use the scheduler policy command. To return to the default setting, use the no form of this command.

scheduler policy { sp | wrr | wfq | drr | fcfs }

scheduler policy { sp | wrr | wfq }

no scheduler policy

Parameters

Parameters	Description
sp	Uses the SP schedule policy.
wrr	Uses the WRR schedule policy.
wfq	Uses wfqr schedule policy.
drr	Uses drr schedule policy.
fcfs	Uses the FCFS schedule policy.

Default Value

The SP schedule policy is used by default.

Command Mode

Global configuration mode, interface configuration mode

Usage Guidelines

This command is run in global configuration mode.

After this command is configured, the schedule mode of the interface is set to the designated value.

Example

The following example shows how to send transmission schedule mode to WRR.

```
Switch_config # scheduler policy wrr
```

1.1.6 scheduler weight bandwidth

Syntax

To set the bandwidth of the CoS priority queue, run the following command. To return to the default setting, use the no form of this command.

scheduler weight bandwidth {weight}&<1-8>

no scheduler weight bandwidth

Parameters

Parameters	Description
<i>weight</i>	Values of eight CoS priority queues WRR/WFQ, ranging between 1 and 15.

Default Value

The weight value of each CoS priority queue is same. All weight values of eight CoS priority queues are 12.

Command Mode

Global configuration mode, interface configuration mode

Usage Guidelines

This command is run in global configuration mode.

If this command is run, the bandwidth of all priority queues on all interfaces are affected. This command validates only when the queue schedule mode is set to WRR/WFQ. This command decides the bandwidth weight value of the CoS priority queue when the WRR/WFQ schedule policy is used.

Example

The following example shows how to set the wrr queue weight value to 1, 2, 3, 4, 5, 6, 7 and 8 respectively.

```
Switch_config # scheduler weight bandwidth 1 2 3 4 5 6 7 8
```


1.1.7 policy-map

Syntax

To set the QoS policy map, run `policy-map name`. To return to the default setting, use the `no` form of this command.

policy-map *name*

no policy-map *name*

Parameters

Parameters	Description
<i>name</i>	Name of the QoS policy map, consisting of 1 to 20 characters.

Default Value

None

Command Mode

Global configuration mode

Usage Guidelines

Global configuration mode

After the command is entered, the system enters the QoS policy mapping configuration mode. In this mode, the following commands are used:

- **classify**: Used to set the QoS flow.
- **description**: Used to describe the QoS policy map.
- **exit**: Used to exit from the QoS policy mapping configuration mode.
- **no**: Used to cancel the previously-entered command.
- **action**: Used to define the QoS action.

Example

The following example shows how to set the QoS policy map.

```
Switch(config)# policy-map myqos
```

1.1.8 classify

Syntax

To configure the matchup data flow of the QoS policy map, run the following command.
To return to the default setting, use the no form of this command.

classify {any | { [ip access-list-name | ipv6 access-list-name | [ethernet-type type | arp-request | arp-reply | diffserv diffserv-value]] | mac mac-access-name | vlan vlan-id [- | &] | ivlan vlan-id [- | &] |cos cos | icos cos | precedence precedence-value | dscp dscp-value | tos tos-value } *}

no classify

Parameters	Description
<i>ip-access-list-name</i>	Configures the name of the matched IP access list.. The name has 1 to -20 characters.
<i>ipv6-access-list-name</i>	Configures the name of the matched IPV6 access list. The name has 1 to 20 characters.
dscp <i>dscp-value</i>	Dscp field in tos of ip packet 0~63.
mac <i>mac-access-name</i>	Configures the name of the matched MAC access list. The name has 1 to 20 characters.
vlan <i>vlanid</i>	Configures the matching VLAN; the valid range is 1 to 4094
ivlan <i>ivlanid</i>	Configures interior tag vlan id. 1-4094.
cos <i>cos</i>	Configures the matching COS value; the valid range is 0 to 7
icos <i>icos</i>	Configures the matching interior tag COS value; the valid range is 0 to 7.
ethernet-type <i>ethernet-type</i>	Configures the packet type, 0x0600-0xFFFF
precedence <i>precedence-value</i>	The priority field in tos of ip packet (5-7 of tos), 0-7.
dscp <i>dscp-value</i>	dscp field of tos in ip packet (2 to 7 of tos), 0~63
tos <i>tos-value</i>	tos in the ip packet represents delay, throughput, reliability and cost field (1-4 of tos), 0~15.
diffserv <i>diffserv-value</i>	All tos field in Ip packet: 8, 0-255.
arp-request	Arp request packet
arp-reply	Arp reply packet
any	Matches up with any packet.

Default Value

Any packet is matched by default.

Command Mode

QoS policy map configuration mode

Usage Guidelines

QoS policy map configuration mode

The IP access list and the MAC access list which are used to match up with the data flows can be configured no more than 16 regulations, or the configuration will fail. When the action in the regulation is permit, the regulation is used to differentiate the data flows; when the action in the regulation is deny, the regulation has no function.

Example

```
Switch_config# policy-map pm-test
Switch-policy-map# classify ip ipacl1 cos 3
```

1.1.9 action

Syntax

To configure the data flow policy of a QoS policy map, run the following command. To return to the default setting, use the no form of this command.

action [cir commit-band bc commit-burst-size {{pir pir-band be peak-burst-size} | {ebs excess-burst-size}} | [conform {forward | dscp dscp-value | discardable {green | yellow | red} | copy-to-cpu} | exceed {forward | drop | dscp dscp-value | discardable {green | yellow | red} | copy-to-cpu} | violate {forward | drop | dscp dscp-value | discardable {green | yellow | red} | copy-to-cpu}}] | cos cos | drop | [dscp dscp-value | precedence precedence-value] | forward | icos icos | ivlan {add ivlanid | ivlanid} | mac mac-addr | monitor session-value | queue queue-value | redirect interface-id | stat-packet | stat-byte | vlanID { add vlanid | vlanid }]*

no action [cir | cos]

Parameters

Parameters	Description
cir commit-band bc	Configuring policing
commit-burst-size {{pir pir-band be peak-burst-size} {ebs excess-burst-size}} [conform {forward dscp dscp-value drop dscp dscp-value	Configures policing. cir <i>commit-band</i> guaranteed bandwidth 1-163840, unit: 64Kbps; bc commit-burst-size burst data packet 4-4096, unit: Kb; be peak-burst-size peak burst size 4-4096, unit: Kb;

 discardable {green yellow red} copy-to-cpu} exceed {forward drop dscp dscp-value discardable {green yellow red} copy-to-cpu} violate {forward drop dscp dscp-value discardable {green yellow red} copy-to-cpu}]	<p>pir pir-band peak value bandwidth 1-163840, unit: 64Kbps;</p> <p>ebs excess-burst-size excess burst size is 4 to 4096. Unit: Kb</p> <p>conform {forward dscp dscp-value} guarantees the bandwidth operation, forward no operation is carried out, dscp modifying dscp value, 0-63;</p> <p>exceed {forward drop dscp dscp-value} the operation which the bandwidth greater than cir and smaller than pir, forward no operation is carried out, drop drop, dscp modifying dscp value, 0-63;</p> <p>violate {forward drop dscp dscp-value} the operation which the bandwidth greater than pir, forward no operation is carried out, drop drop, dscp modifying dscp value, 0-63;</p> <p>discardable {green yellow red} preferential drop green/yello/red marked packet</p> <p>copy-to-cpu simultaneously forward to CPU</p>
cos cos	Sets the matched COS field to cos-value 0-7.
drop	Drops the matched packets.
dscp dscp-value	Sets the matched DSCP field to dscp-value 0~63.
precedence precedence-value	The priority field in tos of ip packet (5~7 of tos). 0-7.
forward	Conducts no operations to the matched packets.
cpicos	Sets to replace the external cos value with internal cos value.
lcos icos	Sets inner cos field matched with the flow to cos-value 0~7
ivlan {add ivlanid ivlanid}	Sets replace, add innder vlanid, 1 to 4094
mac mac-addr	Sets destination mac address.
monitor session-value	Send the packets to monitor interface; the range is 1-4.
queue queue-value	Sets mapping queue; the range is 1-8.
redirect interface-id	Redirects the egress port of the matched flow.
stat-packet	Calculates the number of packets.
stat-byte	Calculate the number of bytes.
vlanID { add vlanid vlanid }	Sets replace or add outer vlanid, 1 to 4094
copy-to-cpu	Forward the packet to CPU simultaneously.
vlanID vlanid	Sets replacing or adding exterior vlanid; the range is 1-4094.

Default Value

None

Command Mode

QoS policy map configuration mode

Usage Guidelines

QoS policy map configuration mode

In normal mode `ivlan` and `icos` operation are invalid. `ivlan` and `icos` must be configured first if `vlan` and `cos` on the port are run on the port but not `dot1q-tunnel-uplink` port.

When Monitor action is applied to the egress, a `polycmap` must be configured independently. Otherwise, the result may be abnormal.

`cir`, `precedence`, `mac`, `queue`, `vlan add`, `ivlan add` cannot be applied to the egress.

Example

```
Switch_config# policy-map pm-test
Switch-policy-map# action redirect g0/1
```

1.1.10 qos policy

Syntax

To configure the QoS policy of a port, run the following command. To return to the default setting, use the `no` form of this command.

qos policy *name* { **ingress**|**egress** }

no qos policy *name*

Parameters

Parameters	Description
<i>name</i>	Stands for the name of QoS policy mapping.
ingress	Functions on the ingress port.
egress	Functions on the egress port.

Default Value

None

Command Mode

Global configuration mode, interface configuration mode

Usage Guidelines

Global configuration mode and interface configuration mode

Example

The following example shows how to configure the pmap QoS policy on interface g0/1.

```
Switch_config# interface GigaEthernet0/1
Switch_config_g0/1# qos policy pmap ingress
```

1.1.11 show policy-map

Syntax

To displays all or some designated QoS policy maps, run the following command.

show policy-map [policy-map-name | interface interface-id | global]

Parameters

Parameters	Description
<i>policy-map-name</i>	Stands for the name of a QoS policy map.
interface interface-id	Stands for the policy of interface application

Default Value

None

Command Mode

Other modes except the user mode

Usage Guidelines

The command must be used in other modes except the user mode.

Example

The following example shows how to display all QoS policy maps.

```
Switch# show policy-map
Policy Map my-qos
Description: my qos policymap
Classify: ip access-group ipacl1
Action: drop
```